

# Summary of the 13<sup>th</sup> International Conference on Environmental Mutagens and 52<sup>nd</sup> Annual Meeting of the Environmental Mutagenesis and Genomics Society

*August 27- September 1 2022 - Ottawa, Ontario, CANADA*

## **Background:**

The International Association of Environmental Mutagenesis and Genomics Societies (IAEMGS) is a global organization composed of numerous international Environmental Mutagenesis and Genomics Societies (EMGS). While these societies meet individually on an annual basis, every four years the IAEMGS convenes a gathering of all EMGS known as the International Conference on Environmental Mutagens (ICEM).

The vision of the EMGS is to promote critical scientific knowledge and research into the causes and consequences of damage to the genome and epigenome in order to inform and support national and international efforts to ensure a healthy, sustainable environment for future generations. The EMGS mission is (1) to foster scientific research and education on the causes and mechanistic bases of DNA damage and repair, mutagenesis, heritable effects, epigenetic alterations in genome function, and their relevance to disease, and (2) to promote the application and communication of this knowledge to genetic toxicology testing, risk assessment, and regulatory policy making to protect human health and the environment. In addition, the EMGS works through the IAEMGS to promote, support and foster training and research in genetic toxicology and environmental mutagenesis.

The IAEMGS awarded the US EMGS the honor of hosting the 13<sup>th</sup> ICEM in Ottawa, the capital city of Canada (meeting website: [www.icem2021ottawa.org](http://www.icem2021ottawa.org)). Local academic and government scientists Drs. Carole Yauk (University of Ottawa), and Francesco Marchetti and Paul White (Health Canada) are serving as the co-chairs for this important meeting. The ICEM will be held at the Westin Hotel and Shaw Conference Centre in Ottawa, August 27-September 1, 2022. Approximately 1,000 scientists and policy makers from around the world are anticipated to participate; however, in light of public health concerns related to the COVID-19 pandemic, which may prevent a full face-to-face meeting, EMGS is evaluating the possibility to hold a hybrid meeting whereby some of the conference's content will be virtual.

The theme of the conference is “Maintaining Genomic Health in a Changing World” encompassing both our changing exposures and ground-breaking tools available to assess adverse genomic effects. Our changing environment includes global warming and the resulting water and air pollution that threaten the survival of our species, the realization of space tourism and colonizing other planets, and technological advancements that allow us to modify the genomes of species at will. Our changing technologies include increasingly data-rich and quantitative sources of mechanistic information, innovative in vitro models and tools, artificial intelligence and novel bioinformatics platforms, and in the clinic, opportunities to tailor disease treatments and custom-design drugs. Today more than ever, understanding how our environment shapes our genomes and the resulting health effects requires global effort.

### **The Program Committee:**

The Program Chairs assembled an influential Executive Committee and Program Committee, including 67 individuals from government, academia, and industry spanning 12 specialty areas (see below) to build a cross-cutting program that bridges basic and applied sciences. The full Program Committee is shown in Appendix 1.

**Specialty areas:** DNA Repair, Applied Genetic Toxicology, Eco-genotoxicology, In Vivo Mutagenicity, Risk Assessment, Epigenetics, Germ Cell and Heritable, Computational Toxicology and Bioinformatics, Novel in Vitro/In Silico Technologies, Genomics, Public Health and Molecular Epidemiology, Radiation Biology.

### **The Program:**

The program offers plenary and symposia lectures from world leaders in environmental mutagenesis and related fields. Speakers will present the latest findings on how chemical, physical and biological agents damage our genomes, the cellular processes that deal with induced DNA damage, the health consequences of unrepaired damage, and regulatory advances in these areas. Provocative keynotes will challenge our community to consider different perspectives, opportunities, and threats. The program will offer a balance of basic and applied research symposia on using cutting-edge approaches to answer fundamental questions on the ability of our species to respond and adapt to environmental insults and maintain genomic health in the face of a world that is continuously changing around us. Researchers from around the world will present the latest work in poster and platform sessions and interact with other attendees to develop future collaborations. Specific activities for students and new investigators will foster interest in environmental mutagenesis and mentor the next generation of scientific leaders.

In total, there will be 30 symposia, 10 platform sessions and six workshops over the 7-day conference. Symposium topics range from basic mechanisms of DNA damage and repair, to applied genotoxicity assessment for safety evaluation and risk assessment, carcinogenesis and genomics, epidemiology and public health, computational toxicology, to big data management, to the newest methodologies in genetic toxicology. The Program Chairs identified a diversity champion (Dr. Vivian Krahl, Australia) who assisted session chairs in ensuring gender and diversity balance in the program. In addition, about \$24,000 for 15 special awards are being designated via the IAEMGS for trainees from minority groups. Finally, there will be six workshops on the opening day of the meeting, and a satellite meeting of the International Workgroup on Genotoxicity Testing that will be held also in Ottawa on August 25-26, 2022.

Details of the various components of the Program are provided below.

## KEYNOTE SPEAKERS

The ICEM will be opened by local government officials, with opening remarks provided by Dr. Mona Nemer, Chief Science Advisor to the Government of Canada.

The Program Chairs have secured an outstanding and influential lineup of confirmed keynote speakers:

1. **Adebowale Adeyemo**, Deputy Director, US Center for Research on Genomics and Global Health US NIH: genomic determinants of health and environmental interactions
2. **Linda Birnbaum**, former Director of the US National Institute of Environmental Health Sciences, US NIH: climate change and emerging public health issues
3. **Kym Boycott**, Senior Scientist, Children's Hospital of Eastern Ontario and Chair of the International Rare Disease Research Consortium: molecular basis of rare heritable diseases
4. **Cynthia Burrows**, Distinguished Professor, Department of Chemistry and Thatcher Presidential Endowed Chair of Biological Chemistry, University of Utah: Base damage across the genome
5. **Amander Clark**, Chair of the Department of Molecular Cell and Developmental Biology, University of California, Los Angeles: germ cell development, epigenetic programming, novel models
6. **John Holdren**, Heinz Professor of Environmental Policy, Kennedy School of Government, Harvard University; Former Science Advisor to President Barack Obama: use of scientific research for development of sound governmental policies
7. **Stephen Scherer**, Director, Center for Applied Genomics, Hospital for Sick Children: genetic variation in the human genome and disease susceptibility
8. **Sir Michael Stratton**, Director of the Wellcome Trust Sanger Institute: human genomics and cancer mutational signatures
9. **Ulla Vogel**, Senior Research Professor, Danish National Center for the Working Environment: human health safety assessments and regulation of manufactured nanomaterials
10. **Graham Walker**, American Cancer Society Professor, Massachusetts Institute of Technology, member of US National Academy of Sciences: recent advances in understanding of DNA repair processes
11. **Maurice Whelan**, Director of Systems Toxicology, European Center for the Validation of Alternative Methods, European Commission Joint Research Center: (geno)toxicity testing in the 21<sup>st</sup> century, alternatives to animal testing
12. **Sunney Xie**, Director of the Biomedical Pioneering Innovation Center, Peking University: single cell genomics and chromatin architecture
13. **Mayana Zatz**, Director of the Human Genome and Stem Cell Research Center, University of São Paulo: genetic basis of human neuromuscular diseases

In addition, there will be three award lectures by the winners of the EMGS, Hollaender and Young Investigator Awards; to be selected by the EMGS in early 2022.

## SYMPOSIA

A total of 30 symposia are included in the main program of the meeting. Symposia are an equal balance of applied and basic science spanning the specialty areas and are summarized below in alphabetical order by the title:

<b>Symposium Title:</b>	Advancing mechanistic analyses in genetic toxicology using high-content and high-throughput methodologies
<b>Chairs:</b>	Alexandra Long ( <i>University of Toronto</i> ); Dan Roberts ( <i>Charles River Laboratories</i> ); Eunnara Cho ( <i>Carleton University</i> )
<b>Planned Speakers:</b>	David Andrews ( <i>Sunnybrook Research Institute &amp; University of Toronto, Toronto, CANADA</i> ) Paul Rees ( <i>Swansea University, Swansea, UNITED KINGDOM</i> ) Steve Bryce/Bevin Engelward/Julie Buick ( <i>Litron Laboratories/Massachusetts Institute of Technology/Health Canada, USA and CANADA</i> ) Joleen Hanna ( <i>Health Canada, Ottawa, CANADA</i> ) John Wills ( <i>University of Cambridge, Cambridge, UNITED KINGDOM</i> )
<b>Symposium Title:</b>	Analyses of DNA modifications and their roles in human carcinogenesis
<b>Chairs:</b>	Haruhiko Sugimura ( <i>Hamamatsu University School of Medicine</i> ), Silvia Balbo ( <i>University of Minnesota</i> )
<b>Planned Speakers:</b>	Yukari Totsuka ( <i>National Cancer Center Research Institute, Tokyo, JAPAN</i> ) Haruhiko Sugimura ( <i>Hamamatsu University School of Medicine, Hamamatsu, JAPAN</i> ) Silvia Balbo ( <i>University of Minnesota, Minneapolis, USA</i> ) Yuval Ebenstein ( <i>Tel Aviv University, Tel Aviv, ISRAEL</i> )
<b>Symposium Title:</b>	Application of computational modeling and bioinformatics in toxicological assessment
<b>Chairs:</b>	Julia Rager ( <i>University of North Carolina</i> ), Marc Beal ( <i>Health Canada</i> )
<b>Planned Speakers:</b>	Olivier Thierry Taboureau ( <i>Université de Paris, Paris, FRANCE</i> ) Weida Tong ( <i>US FDA, National Center for Toxicological Research, Jefferson, USA</i> ) Daniele Wikoff ( <i>ToxStrategies, Ashville, USA</i> ) Scott Auerbach ( <i>NIEHS, National Toxicology Program, Research Triangle Park, USA</i> ) John Wambaugh ( <i>US EPA, Research Triangle Park, USA</i> )
<b>Symposium Title:</b>	Approaches for studies of DNA damage and repair with applications in human biomonitoring and disease risk prediction
<b>Chairs:</b>	Andrew Collins ( <i>University of Oslo</i> ), Bevin Engelward ( <i>Massachusetts Institute of Technology</i> ), Sabine Langie ( <i>Maastricht University</i> )
<b>Planned Speakers:</b>	Andrew Collins ( <i>University of Oslo, Oslo, NORWAY</i> ) Laura Neidernhoffer ( <i>University of Minnesota, Minneapolis, USA</i> ) Sabine Langie ( <i>Maastricht University, Maastricht, THE NETHERLANDS</i> ) Bevin Engelward ( <i>Massachusetts Institute of Technology, Cambridge, USA</i> )
<b>Symposium Title:</b>	Cancer genomics provides insight into cancer etiology, progression and therapeutic response
<b>Chairs:</b>	Barbara Parsons ( <i>US FDA, National Center for Toxicological Research</i> ), Jiri Zavadil ( <i>WHO International Agency for Research on Cancer</i> ), Kelly Harris ( <i>US FDA, National Center for Toxicological Research</i> )
<b>Planned Speakers:</b>	Daniel De Carvalho ( <i>Princes Margaret Cancer Centre, Toronto, CANADA</i> ) Trevor Pugh ( <i>Princes Margaret Cancer Centre, Toronto, CANADA</i> ) Shoji Matsumura ( <i>R&amp;S Safety Science Research, Kao Corporation, Ichikai, JAPAN</i> ) Michael Korenjak ( <i>International Agency for Research on Cancer, Lyon, FRANCE</i> ) Barbara Parsons ( <i>US FDA, National Center for Toxicological Research, Jefferson, USA</i> )
<b>Symposium Title:</b>	Carcinogens, carcinogenesis and cancer: application of artificial intelligence and machine learning

<b>Chairs:</b>	Luoping Zhang ( <i>University of California, Berkeley</i> ), Maria Zhivagui ( <i>University of California, San Diego</i> )
<b>Planned Speakers:</b>	Thomas Hartung ( <i>Johns Hopkins University, Baltimore, USA</i> ) Lila Kari ( <i>University of Waterloo, Waterloo, CANADA</i> ) Kathleen Durkin ( <i>University of California, Berkeley, Berkeley, USA</i> ) Maria Zhivagui ( <i>University of California, San Diego, San Diego, USA</i> ) Luoping Zhang ( <i>University of California, Berkeley, Berkeley, USA</i> )
<b>Symposium Title:</b>	Consequences of pharmaceuticals and chemicals for male and female germ cells and heritability
<b>Chairs:</b>	Jill Escher ( <i>Escher Fund for Autism</i> ), Bernard Robaire ( <i>McGill University</i> )
<b>Planned Speakers:</b>	Bernard Robaire ( <i>McGill University, Montreal, CANADA</i> ) Patrick Western ( <i>Hudson Institute for Medical Research, Melbourne, AUSTRALIA</i> ) Stephen Matthews ( <i>University of Toronto, Toronto, CANADA</i> ) Vesna Jevtovic-Todorovic ( <i>University of Colorado, Aurora, USA</i> ) Hsiao-Lin V Wang ( <i>Emory University, Atlanta, Atlanta, USA</i> )
<b>Symposium Title:</b>	De novo germline mutations and environmental mutagenesis
<b>Chairs:</b>	Kenichi Masumura ( <i>National Institute of Health Sciences</i> ), Jonatan Axelsson ( <i>Lund University</i> ), Mathia Colwell ( <i>University of Minnesota</i> )
<b>Planned Speakers:</b>	Kenichi Masumura ( <i>National Institute of Health Sciences, Kanagawa, JAPAN</i> ) Mizuki Ohno ( <i>Kyushu University, Fukuoka, JAPAN</i> ) Jeffrey Rosenfeld ( <i>Rutgers Cancer Institute of New Jersey, New Brunswick, USA</i> ) Francesco Marchetti ( <i>Health Canada, Ottawa, CANADA</i> )
<b>Symposium Title:</b>	Developing integrated approaches to testing and assessment (IATA) using an adverse outcome pathway (AOP) framework
<b>Chairs:</b>	Chris Barber ( <i>Lhasa Limited</i> ), Bette Meek ( <i>University of Ottawa</i> ), Steven Kane ( <i>Lhasa Limited</i> )
<b>Planned Speakers:</b>	Anthony Lynch ( <i>GlaxoSmithKline, Stevenage, UNITED KINGDOM</i> ) Giel Hendriks ( <i>Toxys BV, Leiden, THE NETHERLANDS</i> ) Chris Corton ( <i>US EPA, Research Triangle Park, USA</i> ) Steve Kane ( <i>Lhasa Limited, Leeds, UNITED KINGDOM</i> ) Crina Heghes ( <i>Lhasa Limited, Leeds, UNITED KINGDOM</i> )
<b>Symposium Title:</b>	DNA cross-link repair and health
<b>Chairs:</b>	Sara Frias ( <i>Instituto de Investigaciones Biomédicas, UNAM/Instituto Nacional de Pediatría</i> ), Alan D. D'Andrea ( <i>Dana-Farber Cancer Institute, Harvard Medical School</i> ), Alfredo Rodríguez ( <i>Harvard Medical School</i> )
<b>Planned Speakers:</b>	Sara Frias ( <i>Universidad Nacional Autónoma de México, Mexico City, MEXICO</i> ) Alan D. D'Andrea ( <i>Harvard University, Boston, USA</i> ) Alfredo Rodríguez ( <i>Universidad Nacional Autónoma de México, Mexico City, MEXICO</i> ) Anniina Färkkilä, ( <i>Helsinki University Hospital, Helsinki, FINLAND</i> ) Jordi Surrallés ( <i>Hospital de Sant Pau, Barcelona, SPAIN</i> )
<b>Symposium Title:</b>	Dynamics of mutation acquisition in somatic cells: SNVs and SVs in the brain, blood and beyond
<b>Chairs:</b>	Thomas E. Wilson ( <i>University of Michigan</i> ), Thomas W. Glover ( <i>University of Michigan</i> ), Natalie Saini ( <i>Medical University of South Carolina</i> )
<b>Planned Speakers:</b>	Peter J. Campbell ( <i>Wellcome Sanger Institute, Cambridge, UNITED KINGDOM</i> ) Jan O. Korbel ( <i>European Molecular Biology Laboratory, Heidelberg, GERMANY</i> ) Bjoern Schwer ( <i>University of California, San Francisco, San Francisco, USA</i> ) Elli Papaemmanuil ( <i>Memorial Sloan Kettering Cancer Center, New York, USA</i> )
<b>Symposium Title:</b>	From genomes to ecosystems: what are the ecological consequences of genotoxicity?

<b>Chairs:</b>	Jason O'Brien ( <i>Environmental and Climate Change Canada</i> ), Gisela de Aragão Umbuzeiro ( <i>State University of Campinas</i> ), Awadhesh Jah ( <i>University of Plymouth</i> ), Helina Gyasi ( <i>University of Ottawa</i> )
<b>Planned Speakers:</b>	Jason O'Brien ( <i>Environment and Climate Change Canada, Ottawa, CANADA</i> ) Helen Poynton ( <i>University of Massachusetts, Boston, USA</i> ) Juliana da Silva ( <i>Universidade La Salle, Canoas, BRAZIL</i> ) Helina Gyasi ( <i>University of Ottawa, Ottawa, CANADA</i> ) Awadhesh Jah ( <i>University of Plymouth, Plymouth, UNITED KINGDOM</i> )
<b>Symposium Title:</b>	Genome editing: intentional mutagenesis of the genome and implications for human health
<b>Chairs:</b>	P.J. Brooks ( <i>Office of Rare Diseases Research, National Center for Advancing Translational Sciences, US NIH</i> )
<b>Planned Speakers:</b>	Samantha Maragh ( <i>National Institute of Standards and Technologies, Gaithersburg, USA</i> ) Krishanu Saha ( <i>The Wisconsin Institute for Discovery, Madison, USA</i> ) Alexis Komor ( <i>University of California, San Diego, San Diego, USA</i> )
<b>Symposium Title:</b>	Genotoxic hazards of air pollution – a global perspective
<b>Chairs:</b>	Paul A. White ( <i>Health Canada</i> ), Gisela de Aragão Umbuzeiro ( <i>State University of Campinas</i> ), Francine Inforçato Vacchi ( <i>Mérieux Nutrisciences Brazil</i> )
<b>Planned Speakers:</b>	Daniel Costa ( <i>University of North Carolina, Chapel Hill, USA</i> ) Paul White ( <i>Health Canada, Ottawa, CANADA</i> ) Gisela de Aragão Umbuzeiro ( <i>State University of Campinas, Limeira, BRAZIL</i> ) Kazuichi Hayakawa ( <i>Kanazawa University, Nomi-City, JAPAN</i> ) David DeMarini ( <i>University of North Carolina, Chapel Hill, USA</i> )
<b>Symposium Title:</b>	How cells tolerate and replicate DNA damage?
<b>Chairs:</b>	Carlos F.M. Menck ( <i>Universidade de São Paulo</i> ), Vanesa Gottifredi ( <i>Fundación Instituto Leloir</i> )
<b>Planned Speakers:</b>	Vanesa Gottifredi ( <i>Fundación Instituto Leloir, Buenos Aires, ARGENTINA</i> ) Patricia Kannouche ( <i>Institut Gustave Roussy, Villejuif, FRANCE</i> ) Alessandro Vindigni ( <i>Washington University School of Medicine, Saint Louis, USA</i> ) Natalia Cestari Moreno ( <i>Universidade de São Paulo, São Paulo, BRAZIL</i> )
<b>Symposium Title:</b>	Impact of obesity on DNA stability and its health consequences
<b>Chairs:</b>	Siegfried Knasmueller ( <i>Medical University of Vienna</i> ), Helga Stopper ( <i>University of Wuerzburg</i> ), Vanessa Moraes de Andrade ( <i>UNESC</i> )
<b>Planned Speakers:</b>	Siegfried Knasmueller ( <i>Medical University of Vienna, AUSTRIA</i> ) Karen Vasquez ( <i>University of Texas, Austin, USA</i> ) Helga Stopper ( <i>University of Wuerzburg, Wuerzburg, GERMANY</i> ) Vanessa Moraes de Andrade ( <i>Universidade de Extremo Sul Catarinense, Criciuma, BRAZIL</i> ) Prakash Hande ( <i>National University of Singapore, SINGAPORE</i> )
<b>Symposium Title:</b>	International Workshop on Genotoxicity Testing: summary of consensus
<b>Chairs:</b>	Hans-Jorge Martus ( <i>Novartis</i> ), David Kirkland ( <i>Kirkland Consulting</i> )
<b>Planned Speakers:</b>	Workgroup leaders will provide an update on the consensus and conclusion reached by the various workgroups.
<b>Symposium Title:</b>	In vitro approaches for risk assessment
<b>Chairs:</b>	Olivier Taboureau ( <i>Université de Paris, FRANCE</i> ), Xiaoqing (Carol) Guo ( <i>US FDA, National Center for Toxicological Research</i> ), Ji-Eun Seo ( <i>US FDA, National Center for Toxicological Research</i> )
<b>Planned Speakers:</b>	Joshua Harill ( <i>Center for Computational Toxicology and Exposure, US EPA, Research Triangle Park, USA</i> ) Marc Beal ( <i>Health Canada, Ottawa, CANADA</i> )

	<p>Elisabeth Elje (<i>NILU-Norwegian Institute for Air Research, Kjeller, NORWAY</i>)  Stefan Pfuhrer (<i>Procter &amp; Gamble, Cincinnati, USA</i>)  Julia Rager (<i>University of North Carolina, Chapel Hill, USA</i>)</p>
<p><b>Symposium Title:</b></p> <p><b>Chairs:</b></p> <p><b>Planned Speakers:</b></p>	<p>Managing genes in space</p> <p>William Kaufmann (<i>Retired, Past EMGS President</i>); Vinita Chauhan (<i>Health Canada</i>)</p> <p>Janet Baulch (<i>University of California, Irvine, Irvine, USA</i>)  Marjan Boerma (<i>University of Arkansas for Medical Sciences, Little Rock, USA</i>)  Michael Weil (<i>Colorado State University, Fort Collins, USA</i>)</p>
<p><b>Symposium Title:</b></p> <p><b>Chairs:</b></p> <p><b>Planned Speakers:</b></p>	<p>Mutagenic hazards of PAHs and PAH mixtures</p> <p>Jennifer Keir (<i>University of Ottawa</i>), Yasunobu Aoki (<i>National Institute for Environmental Studies</i>)</p> <p>Marc Audebert (<i>Institut National de la Recherche en Agriculture, Alimentation et Environnement, Paris, France</i>)  Cynthia Rider (<i>NIEHS National Toxicology Program, Research Triangle Park, USA</i>)  Yasunobu Aoki (<i>National Institute for Environmental Studies, Ibaraki, JAPAN</i>)  Anne Thoustrup Saber (<i>National Research Centre for the Working Environment, Copenhagen, DENMARK</i>)  Jennifer Keir (<i>University of Ottawa, Ottawa, CANADA</i>)</p>
<p><b>Symposium Title:</b></p> <p><b>Chairs:</b></p> <p><b>Planned Speakers:</b></p>	<p>New approaches for informing population variability in chemical risk assessment</p> <p>Catherine Gibbons (<i>US EPA</i>), Michael Stewart (<i>US EPA</i>), Chelsea Weitekamp (<i>US EPA</i>)</p> <p>Mary Beth Terry (<i>Columbia University, New York City, USA</i>)  Weihsueh Chiu (<i>Texas A&amp;M University, College Station, USA</i>)  Lauren Zeise (<i>California EPA, Sacramento, USA</i>)  Zachary Nagel (<i>Harvard University Boston, USA</i>)</p>
<p><b>Symposium Title:</b></p> <p><b>Chairs:</b></p> <p><b>Planned Speakers:</b></p>	<p>New tools in carcinogenicity testing</p> <p>Patricia A. Escobar (<i>Merck &amp; Co. Inc</i>), Barbara Parsons (<i>US FDA, National Center for Toxicological Research</i>)</p> <p>Frank Sistare (<i>Merck &amp; Co. Retired, USA</i>)  Heidrun Ellinger-Zeigelauer (<i>Bayer Health Care, Leverkusen, GERMANY</i>)  Jan Willem van der Laan (<i>Leiden University, Leiden, THE NETHERLANDS</i>)  Kelly Harris (<i>US FDA, National Center for Toxicological Research, Jefferson, USA</i>)</p>
<p><b>Symposium Title:</b></p> <p><b>Chairs:</b></p> <p><b>Planned Speakers:</b></p>	<p>Novel strategies for investigating the incidence and mechanisms of in vivo mutations</p> <p>Steve Rozen (<i>Duke-NUS Medical School</i>), Bevin Engelward (<i>Massachusetts Institute of Technology</i>), Anroud Bout (<i>Duke-NUS Medical School</i>)</p> <p>Jiri Zavadil (<i>International Agency for Research on Cancer, Lyon, FRANCE</i>)  Jill Kucab (<i>King's College, London, UNITED KINGDOM</i>)  Natalie Saini (<i>Medical University of South Carolina, Charleston, USA</i>)  John Essigmann (<i>Massachusetts Institute of Technology, Cambridge, USA</i>)</p>
<p><b>Symposium Title:</b></p> <p><b>Chairs:</b></p> <p><b>Planned Speakers:</b></p>	<p>Personalized cancer risk and prevention: models integrating genetics, infection, diet, exercise and other factors for specific cancers</p> <p>Rosalie Elespuru (<i>US FDA, Center for Devices and Radiological Health, Silver Spring, USA</i>), Catherine Fischer (<i>US NCI, Division of Cancer Prevention, Bethesda, USA</i>)</p> <p>Rosalie Elespuru (<i>US FDA, Center for Devices and Radiological Health, Silver Spring, USA</i>)  Daniel Krewski (<i>University of Ottawa, Ottawa, CANADA</i>)  Shoichiro Tsugane (<i>National Cancer Center, Tokyo, JAPAN</i>)  Scott T. Leatherdale (<i>University of Waterloo, Waterloo, CANADA</i>)</p>
<p><b>Symposium Title:</b></p>	<p>Polynucleotide signatures and regulation of genotoxin stress response</p>

<b>Chairs:</b>	Robert W. Sobol ( <i>University of South Alabama</i> ), Bret D. Freudenthal ( <i>University of Kansas Medical Center</i> ), Aishwarya Prakash ( <i>University of South Alabama</i> )
<b>Planned Speakers:</b>	Shana Sturla ( <i>ETH Zurich, Zurich, SWITZERLAND</i> ) Francesca Storici ( <i>Georgia Institute of Technology, Atlanta, USA</i> ) Robert W. Sobol ( <i>University of South Alabama, Mobile, USA</i> )

<b>Symposium Title:</b>	Risk Assessment of low-dose rate radiations: lessons from the Fukushima nuclear accident.
<b>Chairs:</b>	Takayoshi Suzuki ( <i>National Institute of Health Sciences</i> ), Yoshihisa Matsumoto ( <i>Tokyo Institute of Technology</i> )
<b>Planned Speakers:</b>	Kayo Togawa ( <i>International Agency for Research on Cancer, Lyon, FRANCE</i> ) Birajalaxmi Das ( <i>Bhabha Atomic Research Centre, Mumbai, INDIA</i> ) Ignacia Braga Tanaka ( <i>Institute for Environmental Sciences, Rokkasho, JAPAN</i> ) Yoshihisa Matsumoto ( <i>Tokyo Institute of Technology, Tokyo, JAPAN</i> )
<b>Symposium Title:</b>	R-loop roadblocks to transcription and replication
<b>Chairs:</b>	Philip Hanawalt ( <i>Stanford University</i> ), Andrés Aguilera ( <i>Universidad de Sevilla-CSIC</i> ), Yesenia Rodriguez ( <i>National Institute of Environmental Health Sciences</i> )
<b>Planned Speakers:</b>	Andrés Aguilera ( <i>Universidad de Sevilla-CSIC, Seville, SPAIN</i> ) Karlene Cimprich ( <i>Stanford University School of Medicine, Stanford, USA</i> ) Gaëlle Legube ( <i>CNRS-Université Toulouse, Toulouse, FRANCE</i> ) Philippe Pasero ( <i>CNRS and Université de Montpellier, Montpellier, FRANCE</i> )
<b>Symposium Title:</b>	Role of RNA in DNA repair
<b>Chairs:</b>	Mats Ljungman ( <i>University of Michigan</i> ), Heather O'Hagan ( <i>Indiana University</i> )
<b>Planned Speakers:</b>	Alberto Kornblihtt ( <i>University of Buenos Aires, Buenos Aires, ARGENTINA</i> ) Martijn Luijsterburg ( <i>Leiden University, Leiden, THE NETHERLANDS</i> ) Fabrizio d'Adda di Fagagna ( <i>FIRC Institute of Molecular Oncology, Milan, ITALY</i> )
<b>Symposium Title:</b>	The Graham Walker Symposium: Complexity of cellular responses to DNA damage
<b>Chairs:</b>	Iain Lambert ( <i>Carleton University</i> ), Bruce McKay ( <i>Carleton University</i> )
<b>Planned Speakers:</b>	Graham Walker ( <i>Massachusetts Institute of Technology, Cambridge, USA</i> ) Cynthia Kenyon ( <i>University of California, San Francisco, San Francisco, USA</i> ) Mark Sutton ( <i>University of Buffalo, Buffalo, USA</i> )
<b>Symposium Title:</b>	Using quantitative genetic toxicology to advance the assessment of genotoxic impurities in pharmaceuticals
<b>Chairs:</b>	George Johnson ( <i>Swansea University</i> ), Andreas Zeller ( <i>F. Hoffmann - La Roche</i> ), Alexandra Long ( <i>University of Toronto</i> )
<b>Planned Speakers:</b>	George Johnson ( <i>Swansea University, Swansea, UNITED KINGDOM</i> ) Roland Frötschl ( <i>BfArM, Bonn, GERMANY</i> ) Michelle Kenyon ( <i>Pfizer, Groton, USA</i> ) Alexandra Long ( <i>University of Toronto, Toronto, CANADA</i> )

There will also be ample opportunity for non-invited attendees to have a chance to present at the ICEM as most of the symposia will include two 15-min talks that will be selected from submitted abstracts.



## PLATFORMS

Ten thematic platform sections will take place during the five main days of the meeting providing an opportunity for 60 attendees to give a 15-min talk to present their work. The 10 platform sessions are:

1. In vivo mutagenicity testing strategies
2. In vitro testing strategies
3. Epigenomics and heritable effects
4. Risk assessment
5. Advances in DNA repair 1
6. Advances in DNA repair 2
7. Emerging public health issues
8. Persistent chemical hazards
9. Applied genetic toxicology
10. Bioinformatics challenge

## POSTERS

The hub of the scientific meeting is the exciting new science being presented in poster format. Our opening evening will include a two-hour student and new investigator poster session. There will be three additional poster sessions accommodating up to 200 posters at a time, with exhibitions from vendors in parallel throughout the meeting. These will be integrated with coffee breaks and cocktail hours to maximize attendance and interactions.

## WORKSHOPS

Half and full day workshops will also be offered, spanning the most cutting edge new technologies for measuring toxic effects to the genome (transcriptomics including single-cell sequencing, error corrected sequencing), to modern version of conventional tests (Mini Ames and comet assay) and advances in risk assessment (reactive botanicals and in silico approaches):

1. Mini versus standard Ames assays: what have we learned from the OECD's comparative evaluation (Chair: Birgit Mertens, BELGIUM)
2. Application of computational modeling and bioinformatics in toxicological hazard and risk assessment (Chairs: Julia Rager, UNC-Chapel Hill, USA; Marc Beal, Health Canada, CANADA)
3. Time to solve a crisis? Can risk stemming from exposures to plant-based DNA-reactive pyrrolizidine alkaloids be managed using relative potency factors? (Chairs: Stefan Pfuhler and Lin Ge, Procter & Gamble, USA)
4. Advances in error-corrected sequencing technologies for mutation detection (Chairs: Sheroy Minocherhomji, Amgen, USA; Robert Young, MilliporeSigma, USA; Francesco Marchetti, Health Canada, CANADA)
5. Methods and applications of the CometChip and additional cell microarray technologies (Chairs: Simran Kaushal and Norah Owiti, Massachusetts Institute of Technology, USA)
6. In silico approaches in genetic toxicology: Application Ames QSAR to ICH-M7 (Chairs: Keiichi Sugiyama, National Institute of Health Sciences, JAPAN; Catrin Hasselgren, Genentech, USA)

Additional general information about the meeting is available at <https://www.emgs-us.org/page/overview-261>.

## **Appendix 1**

### **ICEM 2022 Program Committee**

#### **Organizing Committee Executive**

Paul White – co-chair

Francesco Marchetti – co-chair

Carole Yauk – co-chair

Bevin Engelward

Joann Sweasy

David DeMarini

Catherine Klein

#### **EMGS Executive:**

Carole Yauk (President)

Christi Walter (Treasurer)

Janice Pluth (Secretary)

William Kauffmann (Past President)

Robert Bevans-Kerr (Executive Director)

#### **IAEMGS Executive:**

Paul White, President

Wilner Martínez-López, Treasurer

Carlos F. M. Menck, Secretary

Catherine B. Klein, Vice President

Young-Joon Surh, Vice President

Robert Bevans-Kerr, Executive Director

#### **SIG-aligned Thematic Sub-committees**

1. DNA Repair
  - a. Robert W. Sobol
  - b. Matts Ljungman
  - c. Carlos Frederico Martin Menck
  - d. Susan Patricia Less-Miller
  - e. Karen Vasquez
  - f. Wim Vermeulen
  - g. Sara Frias
  
2. Applied Genetic Toxicology
  - a. Steve Dertinger
  - b. Bevin Engelward
  - c. Carolina Garcia-Canton
  - d. Rosalie Elespuru
  - e. Zachary Nagel
  - f. Takafumi Kimoto
  
3. Eco-genotoxicology
  - a. Jason O'Brien
  - b. Gisela Umbuzeiro

- c. Awadhesh Jha
- 4. In Vivo Mutagenicity Assessment
  - a. Barbara Parsons
  - b. Jef Bemis
  - c. Volker Arlt
  - d. Takehiko Nohmi
- 5. Risk Assessment
  - a. Roland Froetschl
  - b. Catherine Gibbons
  - c. Katie Paul-Friedman
- 6. Epigenetics
  - a. Catherine Klein
  - b. Christopher Faulk
  - c. Sarah Kimmins
- 7. Germ Cell and Heritable
  - a. Jill Escher
  - b. Bernard Robaire
- 8. Comp Tox and Bioinformatics
  - a. Scott Auerbach
  - b. Julia Rager
  - c. Olivier Taboureau
- 9. Novel in Vitro/In Silico
  - a. Stefan Pfuhler
  - b. Stephen Ferguson
- 10. Genomics
  - a. Tom Wilson
  - b. Brian Chorley
  - c. Mathieu Vinken
  - d. Caren Weinhouse
- 11. Public Health and Molecular Epi
  - a. Luoping Zhang
  - b. Ulla Vogel
  - c. Karin Broberg
  - d. Tangchun Wu
  - e. Patricia Ostrosky
- 12. Radiation Biology
  - a. Janet Baulch
  - b. Vinita Chauhan

## International Representation

Name	EMGS
Yong-Rok Seo	Korea
Hiroyuki Kamiya	Japan
Yukari Totsuka	Japan
Jia Cao	China
Jun Yang	China
Sabine Langie	Belgium
George Johnson	United Kingdom
Juliana da Silva	Brazil
Jeanine Von Metzinger	South Africa
Ashok Giri	India
Radha Saraswarthy	India
Wilner Martinez	Uruguay
Deidamia Franco de Diana	Paraguay
Sepideh Arbabi	Iran

**Gender and Diversity Champion:** Vivian Krahl (post-doc from Brazil now working in Australia): Children's Medical Research Institute (CMRI), Westmead, Australia. [vivian.kahl@gmail.com](mailto:vivian.kahl@gmail.com)